

Converting units of measure - prefixes

When we put prefixes in a line from large to small we get something like this

Mega	kilo	hecto	deca	BASIC	deci	centi	milli	micro	nano
(M)	(k)	(h)	(da)	UNIT	(d)	(c)	(m)	(μ)	(n)
1,000,000	1,000	100	10	1	.1	.01	.001	.000001	.000000001
10^6	10^3	10^2	10^1	10^0	10^{-1}	10^{-2}	10^{-3}	10^{-6}	10^{-9}



To do a conversion all you need is an equality. Here's a few examples of how to:

1. 5250 m (meters) = how many km (kilometers).
 - a. k is 10^3 and m is 10^0
 - b. The difference in exponents is 3. So we will use 3 zeros with a 1 (1000) to represent how many of the smaller units are in the bigger unit.
 - c. The bigger prefix is k, is
1 km = 1000 m
 - d. Now use a grid to make the conversion:

5250 m	1 km	Ans	5.25 km
1	1,000 m		

2. 346 hL (hectoliters) = hoe many μ m (micrometers)
 - a. h is 10^2 and μ is 10^{-6}
 - b. $2 - (-6) = 8$. h is the bigger prefix, so 1 hL = 100,000,000 μ L

346 hL	100,000,000 μ L	Ans	34,600,000,000 μL
1	1,000 hL		

We would probably write this number as 3.46×10^{10} μ L

3. 489 mg = how many kg ?

- a. m is 10^{-3} and k is 10^3
b. $(-3) - (3) = -6$ k is the bigger prefix, so $1k = 1,000,000 m$

489 mg	1 kg	Ans	4.89×10^{-4} kg
1	1,000,000 mg		